

Phillips Scientific

Octal Two-Fold Logic Unit

NIM MODEL 758

FEATURES

- 150 MHZ RATE CAPABILITY
- DEADTIMELESS UPDATING OPERATION
- EIGHT INDEPENDENT CHANNELS
- 1 nSEC INPUT OVERLAP WIDTH
- FAST VETO AND BIN GATE INHIBITING

DESCRIPTION

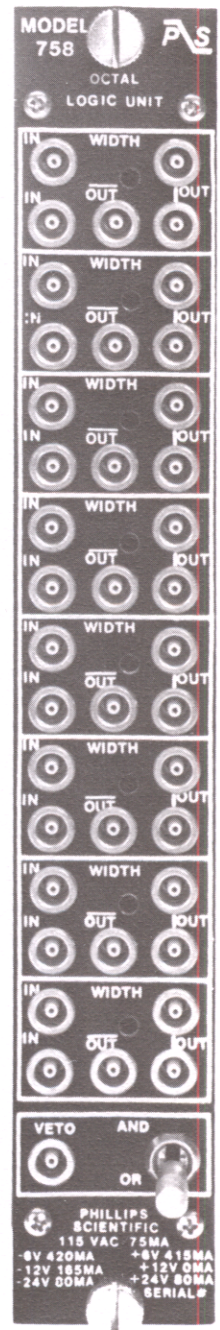
The model 758 is a high-performance, eight-channel, two-input logic unit packaged in a single-width NIM module. It performs logical AND, OR, fan-in and fan-out functions.

Each channel has two logic inputs, an output width control, and three outputs. A two position switch is common to all eight channels for selecting either the AND/OR logic functions.

Inhibiting of the logic unit can be accomplished in two ways. A front panel LEMO input accepts a NIM level pulse for fast simultaneous inhibiting of all eight channels. Secondly, a slow bin gate via the rear panel connector inhibits the module and is enabled or disabled from a rear panel slide switch.

Output durations are continuously variable via a front panel control over the range of 4 nSEC to 150 nSEC. The updating design permits deadtimeless operation which is desirable for fast coincidence applications at high rates.

The 758 has three high-impedance current switching outputs per channel. They are configured as one pair of double amplitude bridged outputs and one complemented NIM level. When only one output from the bridged pair is used, a double-amplitude NIM pulse (-32 mA) is generated for driving long cables. Two normal NIM levels are produced when both of the bridged outputs operate into 50 ohm loads. The output risetimes and falltimes are typically 1 nSEC, and their shapes are unaffected by the loading conditions of the other outputs.



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INPUT CHARACTERISTICS

Logic Inputs:

Two LEMO connector inputs per channel; direct coupled; 50 ohm impedance; accepts NIM level logic signals (-500 mV or greater); outputs will be produced with inputs of 1 nSEC or greater width; inputs are protected against damage from ± 100 Volt transients of 1 μ SEC.

Fast Veto:

One LEMO connector input common to all eight channels; accepts normal NIM level pulse (-500 mV); 50 ohm impedance; direct coupled the veto input must precede by 5 nSEC, the leading edge of the input signal that would ordinarily satisfy the logic conditions. Requires a 4 nSEC minimum input pulse width.

Bin Gate:

Rear panel slide switch enables or disables the slow bin gate via the rear connector. Signal levels are in accordance with the TID-20893 standard. Responds in approximately 10 nSEC to a bin gate signal.

OUTPUT CHARACTERISTICS

General:

Three LEMO connector outputs per channel; One negative bridged pair and one complementary output; The bridged outputs deliver -32mA into a single 50 ohm load (-1.6 volts), or -16mA (-800mV) when both outputs 50 ohm terminated. The complement is quiescently -16mA (-800mV) and goes to 0mA during output. The output rise and fall times are less than 1.5 nSEC from 10% to 90% levels.

Width Control:

One front panel control per channel; 15 turn screwdriver adjustment; outputs continuously variable from 4 nSEC to 150 nSEC. Output width stability is $\pm 0.15\%/^{\circ}\text{C}$ of setting.

Updating Operation:

The output pulse will be extended if a new input pulse occurs while the output is active. This provides deadtimeless operation and 100% duty cycle can be achieved.

GENERAL PERFORMANCE

Logic Functions:

Logic AND, OR, Fan-In/Fan-Out. All functions have leading-edge inhibit and produce standardized outputs.

Coincidence Width:

Overlap times of 1 nSEC or greater will produce outputs.

Continuous Repetition Rate:

Greater than 150 MHz, with output width set at minimum. Typically 160 MHz.

Pulse-Pair Resolution:

Better than 6.5 nSEC, with output width set at minimum.

Input to Output Delay:

Less than 7.5 nSEC.

Multiple Pulsing:

One and only one output regardless of input amplitude or duration.

Power Supply Requirements:

- 6 volts @ 420 mA	+ 6 volts @ 415 mA
-12 volts @ 165 mA	+12 volts @ 0 mA
-24 volts @ 80 mA	+24 volts @ 80 mA

115 volts AC @ 75 mA

NOTE : All currents are within NIM specification limits allowing a full bin to be operated without overloading.

Operating Temperature:

0°C to 70°C ambient.

Packaging

Standard single width NIM module in accordance with TID-20893 and section ND-524.

Quality Control:

Standard 36-hour, cycled burn-in with switched power cycles.